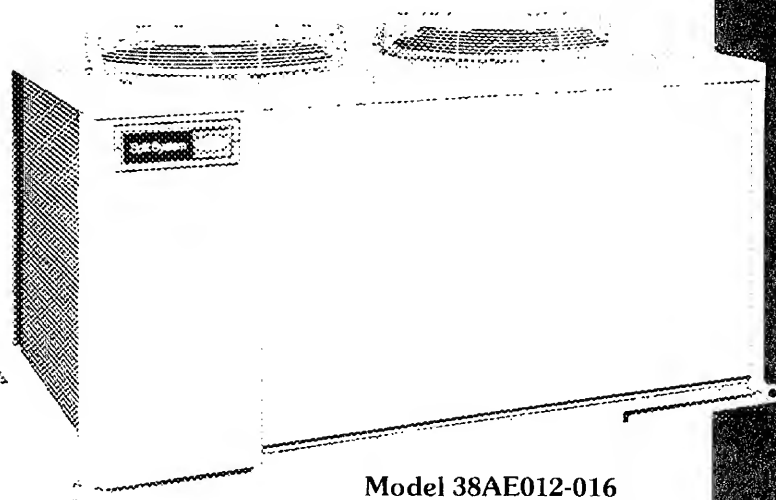


Carrier Air-Cooled Condensing Units

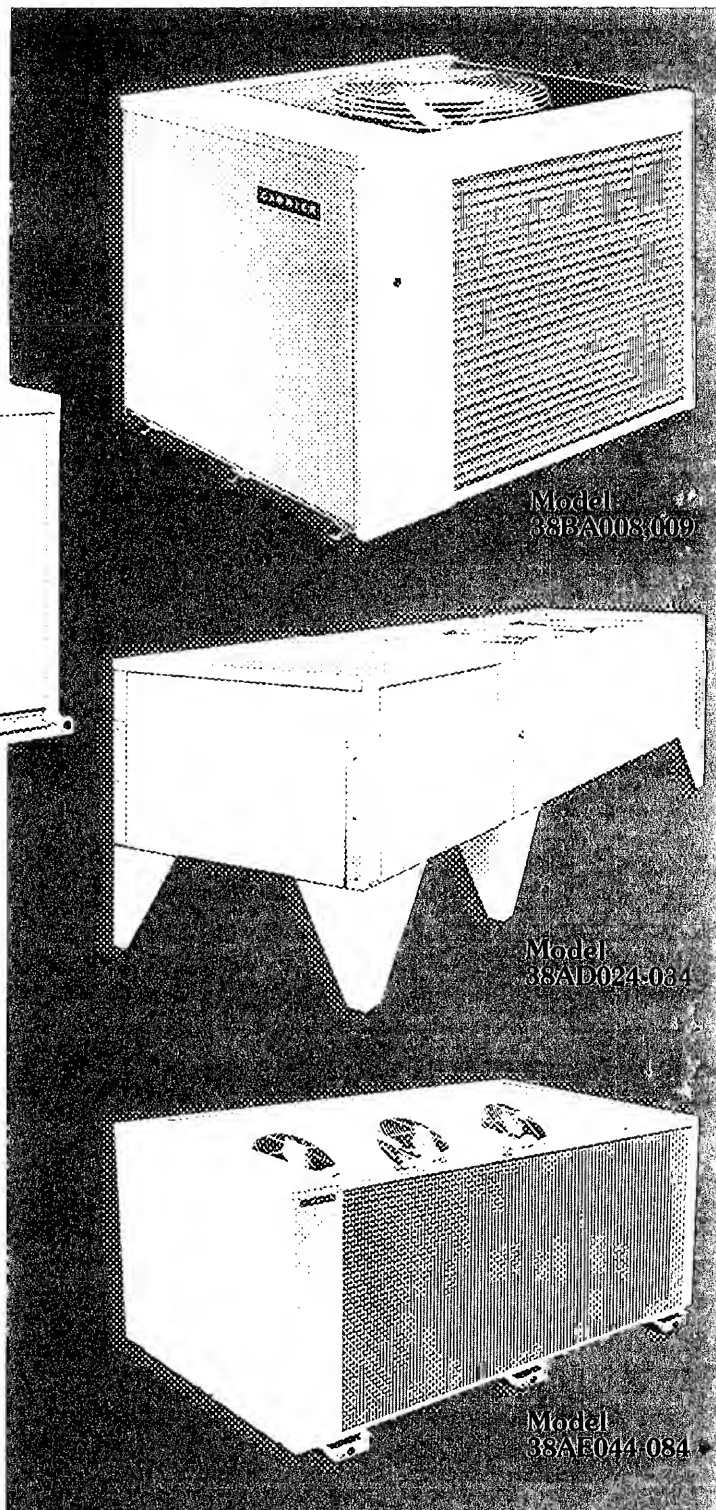
38

Models 38AD,AE,BA
Capacities 92,000 — 978,000 Btuh



Model 38AE012-016

The standout line
of deluxe products
for commercial and
industrial applications



Model
38BA008-009

Model
38AD024-084

Model
38AE044-084



Carrier split systems expertise helps put an effective lid on runaway operating costs.

Specify Carrier deluxe air-cooled condensing units for those commercial and industrial applications where the operating efficiency and initial low-cost advantages of a split system are needed, along with the performance attributes of a built-up system. Matched with a Carrier packaged air handler or indoor coil section, these reliable condensing units provide cost-efficient cooling at a price that won't break your budget. And in these days of increased attention on the whole concept of energy usage, these units are standout performers. With Energy Efficiency Ratios (EER's) to 9.5!

Choose from 3 basic models, 38AD, AE, and BA, in 12 popular sizes covering the capacity range from 92,000 to 978,000 Btuh. Here are some of the quality features Carrier offers to help you keep the lid on runaway operating costs while at the same time delivering year after year of reliable performance you can count on:

High-pressure switch — protects compressor from excessive condensing pressures.

Low-pressure switch — provides loss of charge and evaporator freeze-up protection.

Direct-drive condenser fans — give quiet, dependable operation; superior sound level control because of advanced fan and venturi design concepts.

Crankcase heaters — standard on all models. Helps keep oil in crankcase where it belongs.

Motor protection — includes both temperature and current sensitive devices to prevent failure from electrical overload.

Weather Armor cabinet — weatherproofed for maximum durability, whether units are mounted on the ground or on the roof.

The Deluxe Lineup

38BA	92,000 — 103,000 Btuh
38AE	119,000 — 132,000 Btuh
38AD	252,000 — 371,000 Btuh
38AE	480,000 — 978,000 Btuh

→ **Aluminum fin on copper tube coil construction** — designed for maximum heat transfer and circuited for sub-cooling. Corrosion resistant copper fin/copper tube coils are available.

Head pressure control — is built-in thru fan cycling. In 38AD units (three fans), one fan is cycled by an ambient temperature sensor; a second

fan is cycled by a head pressure sensor. In 38AE units with 2 or 4 fans, fan cycling is controlled by a head pressure sensor. In 6 fan units, 2 fans are cycled by an ambient temperature sensor, and 2 are cycled by a head pressure sensor.

Time-delay and part-winding start control — larger units are equipped with a simple inexpensive means of reducing power demand on start-up and reducing inrush current. On 38AE models with 2 compressors, there is time-delayed start of the second compressor. On Model 38AE084, the second compressor has a time-delay start, with an additional time-delay start for compressor no. 3. On 200/230-volt Models 38AD024-034 and 460-volt Models 38AD028-034, part-winding start control is provided.

Oil-pressure switch — takes the compressor off the line 40 seconds after start-up if oil pressure does not rise to switch setting or if pressure is lost. Manual reset on single compressor Models 38AD and on the lead compressor of Models 38AE044-084.

Solenoid drop relays — are an integral part of the unit controls on Models 38AD and 38AE044-084 to closely monitor solenoid valve operation. On 38AD models, they also allow single pumpout control to evacuate the low side of the system when the system cycles off. As a safety measure, solenoid closes when the compressor trips off.

A tough semihermetic compressor is at the heart of 38 Series condensing units. . .

The compressors used in Carrier air-cooled condensing units are built to exacting standards to deliver outstanding efficiency and overall performance.

Single crankshaft for motor and compressor ends the need for seals, eliminates costly seal leaks, and the expense of shaft realignment often found with open compressors. Crankshaft is polished in both directions to a micro-inch finish. Assures reliability on start-ups, prevents scoring of bearing surfaces.

Vane-type oil pump offers positive oil displacement and is automatically reversible. Needs no breaking in; does not jam.

Oil-pressure regulating valve maintains metered oil pressure to the bearings; keeps bearing wear to a minimum.

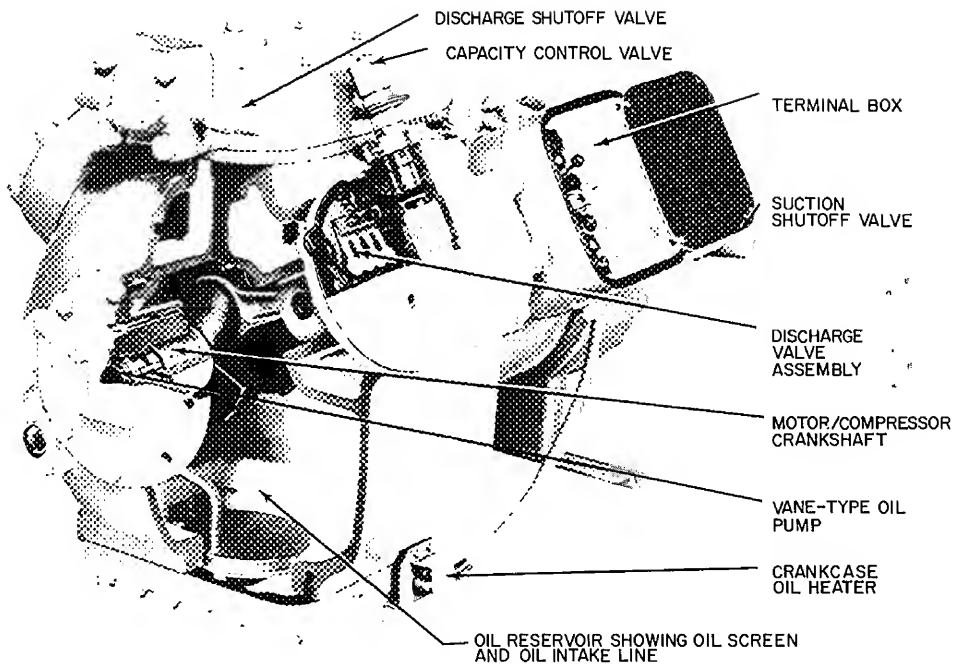
Class F rated stator windings enable the motor to withstand higher operating temperatures during locked rotor conditions.

Automotive-type compression and oil scraper rings ensure compression and a low rate of oil circulating thru the system, wiping cylinder walls clean of oil, just like in an automobile.

Swedish steel flapper valves have been designed to withstand the stress of prolonged operation. Large port areas for suction and discharge valves decrease gas velocity, minimizing pumping losses, increasing overall efficiency, improving the Btuh/watt ratio (EER).

Pump end bearings are made from permanent mold aluminum castings. Motor end bearing is steel backed, tin base babbitt type.

Piston and connecting rod are composed of a high-density permanent mold aluminum alloy casting, which makes an integral connecting rod bearing.



Time Guard® circuit prevents compressor short cycling by requiring a delay of several minutes before compressor can restart after stopping (Models 38AE012-016; 38BA).

Models 38AD024-034, and 38AE044-084 feature a special multifunction Time Guard circuit. This provides approximately a five-minute compressor restart delay, part-winding start of compressors (when offered), bypass of the low-pressure switch at start-up for winter start control, and bypass of the oil-pressure switch at start-up which will shut off the compressor if oil pressure does not reach proper operating level within 40 seconds.

Capacity control device is a bypass type that routes discharge gas back into the suction manifold to unload the compressor to partial capacity (Models 38AE012-016).

Models 38AD024-034 and 38AE044-084 have a suction cut-off type that blocks gas from entering the controlled cylinders when the compressor is unloaded.

Check valve opens to discharge gas into the manifold during loaded operation and closes to isolate the cylinder bank from the manifold during unloaded operation (Models 38AE012-016).

Oil level control orifice or check valve minimizes oil loss from compressor crankcase at start-up. This feature relieves crankcase pressure to the low side and prevents excess oil being pumped out to the high side.

Crankcase heater raises oil temperature during off cycle, reducing refrigerant migration which would dilute the oil and allow it to be pumped away at start-up.

Physical data and dimensions

PHYSICAL DATA 38AD,AE

MODEL	38AE			38AD			38AE								
	012	014	016	024	028	034	044	054	064	084					
OPER WT (lb)	732	779	789	1750	1900	2300	2686	3158	3682	5160					
REFRIGERANT	R-22														
Oper Chg (lb)*	22 0	23 0	23 0	28 0	30 5	35 5	38	57	81	110					
COMPRESSOR	Reciprocating Hermetic, 60-Hz; 1750 Rpm														
Model(s)	06DD	06DD	06DD	06E4	06E5	06E5	06E4	06EA	06E5	06EA	06E4	06EA	06E8	06EF	
	824	328	537	250	265	275	250	250	275	250	275	275	250	275	275
Cylinders	6	6	6	4	6	6	4	4	6	4	6	6	4	6	6
Oil (pt)	8	8	8	14	19	19	14	14	19	14	19	19	14	19	19
CONDENSER FANS	Propeller Type; Direct Drive; Vertical Discharge														
Number	2	2	2	3	3	3	4	6	6	6					
Rpm; 60-Hz	1075	1075	1075	1140	1140	1140	1080	1080	1080	1060					
Air Quantity (cfm)	8,800	8,800	8,800	18,200	25,200	28,200	26,000	39,000	39,000	54,000					
Watts (Total)	1410	1410	1410	3360	4050	4050	2680	4020	4020	7980					
Horsepower	1/2	1/2	1/2	1	1	1	1/2	1/2	1/2	1					
CONDENSER COIL															
Rows.. Fins/in	2 15	3 15	3 15	3 11 7	3 12 4	3 12 4	3 15 8	2 16 5	3 14 6	3 14 6					
Face Area (sq ft)	29 2	29 2	29 2	35 4	39 0	49 6	76 6	114	114	153					
Storage Cap (lb)†	27 2	40 0	40 0	70	77	99	93 7	148 3	222 8	320					
DIMENSIONS (ft-in)															
Length	A	6-4-1/4	6-4-1/4	6-4-1/4	12-10-3/4		11-0-1/4	12-10-9/16		13-8-5/32					
Width	B	3-8	3-8	3-8	3-11-1/2		4-10	7- 0-1/2		7-0-7/16					
Height (Note 2)	C	3-3-7/8	3-3-7/8	3-3-7/8	2- 4-1/8		3-1-7/8	4-8-5/32		7-4-1/8					
Leg Height	D	0-2	0-2	0-2	1-8		0-5	0-5		0-5					
Mounting Holes															
Legs	J	—	—	—	0- 2-1/2		—	—		—					
	K	6-2-1/4	6-2-1/4	6-2-1/4	3-6-1/4 3-6-1/4 4-4-3/4		7-3-5/32	7- 3-5/32		7-3-5/32					
	L	—	—	—	3-7-3/8		5-6-1/2	8-2		5-3-3/4					
	M	3-3-1/2	3-3-1/2	3-3-1/2	8-10		3-5-5/8	2- 8-5/16		5-0					
CONNECTIONS (in)															
Suction	1-1/8	1-3/8	1-3/8	ODM 1-5/8		ODF 2-1/8	ODF 2-5/8	ODF 2-5/8		ODF 2-5/8					
Liquid	5/8	5/8	5/8	7/8		7/8	1-1/8	1-1/8		1-1/8					
Hot Gas Bypass	3/8	3/8	3/8	5/8		5/8	5/8	5/8		7/8					
OPENINGS (in)															
Suction	E	1-3/4	1-3/4	1-3/4	2-1/2		—	—		—					
Liquid	F	1-1/4	1-1/4	1-1/4	1-3/4 1-1/2 1-3/4		—	—		—					
Control	G	7/8	7/8	7/8	7/8		—	—		—					
Power	H	2	2	2	3-5/8		3‡	3-1/2‡		4‡					

*Approximate charge for maximum system capacity. Holding charge is factory supplied with all units.

†Condenser 80% full of liquid R-22 at 125 F for 012,014,016 units and 120 F for all other units.

‡American Standard straight pipe thread.

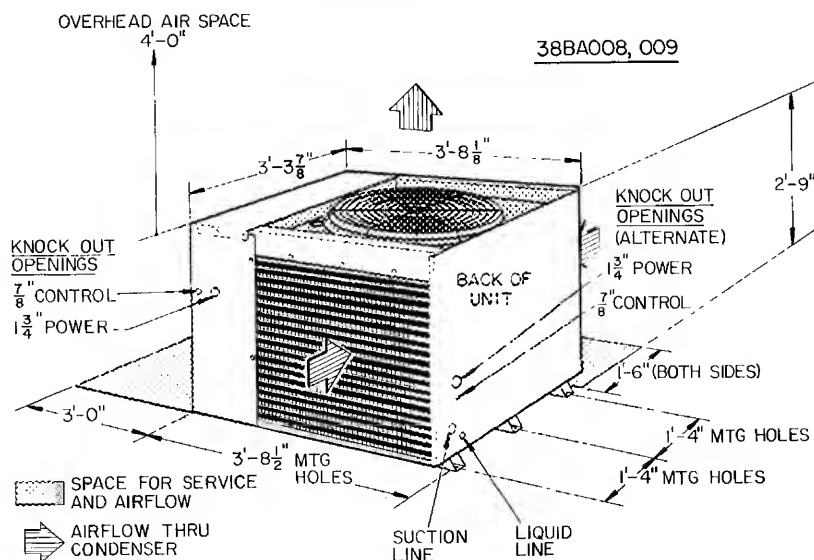
- NOTES:
1. All multiple-compressor units have interconnected refrigerant piping.
 2. Total height for 38AE units; height without legs for all other units.

PHYSICAL DATA 38BA

MODEL	38BA	
	008	009
OPERATING WT (lb)	565	595
REFRIGERANT	22	
Operating Chg (lb)*	14 5	16
COMPRESSOR	06DA818	06DA824
Cylinders	4	6
Rpm (60-Hz)	1750	1750
Oil Charge (pt)	7	10
CONDENSER FAN	Propeller Type, Direct Drive Vertical	
Air Discharge	5000	5000
Air Quantity (cfm)	1075	1075
Motor Rpm	660	660
Watts	1/2	1/2
Motor Hp	1/2	1/2
CONDENSER COILS	14 3 Fins per inch	
Face Area (sq ft)	12.46	12.46
Rows	3	3
CONNECTIONS (in.)		
Suction (ODM) Sweat	1-1/8	1-1/8
Liquid (ODM) Flare	1/2	5/8

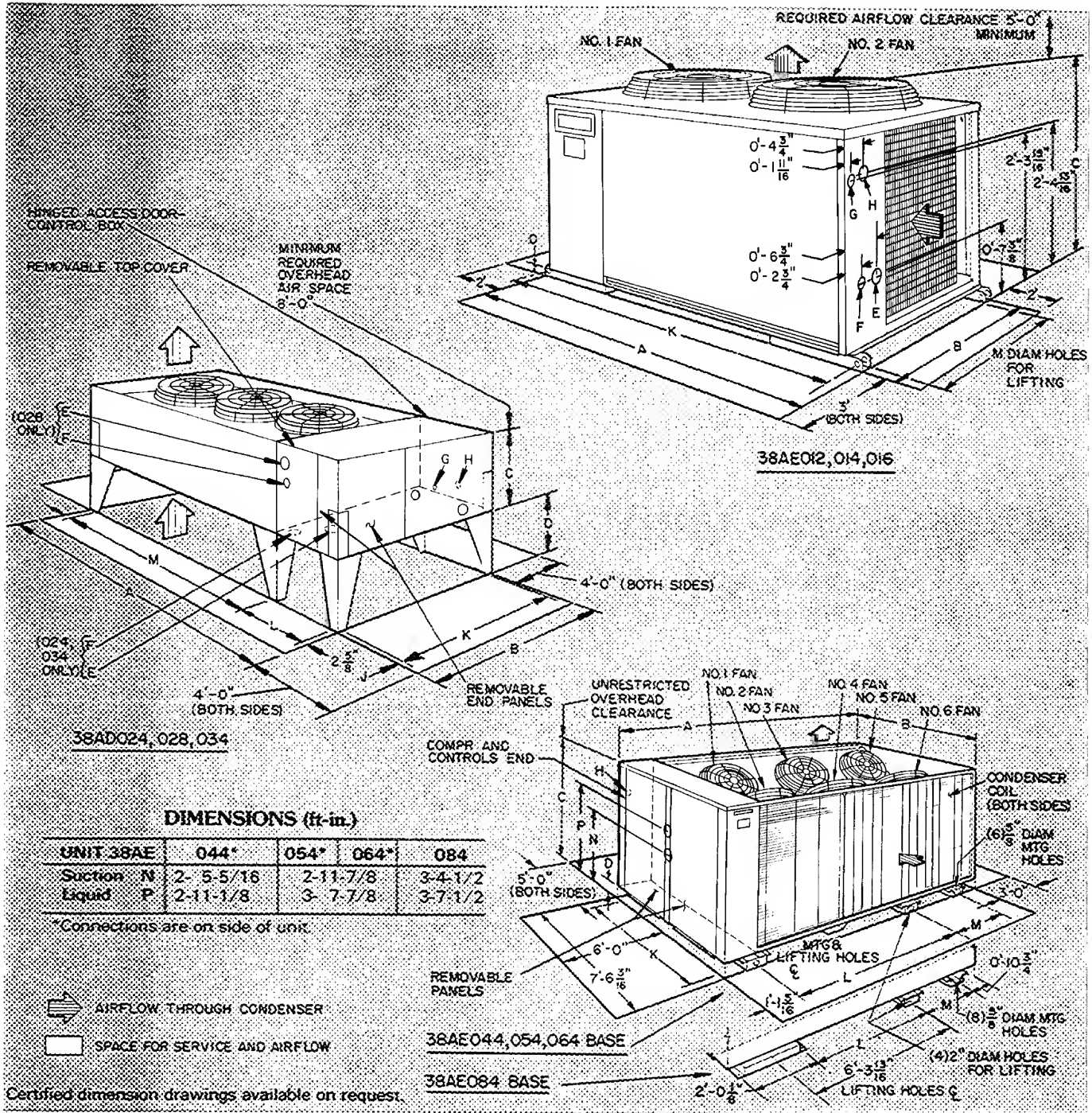
*Approximate charge for maximum system capacity when using 25 ft of tubing. Units are factory supplied with approximately 2 lb holding charge.

DIMENSIONS 38BA



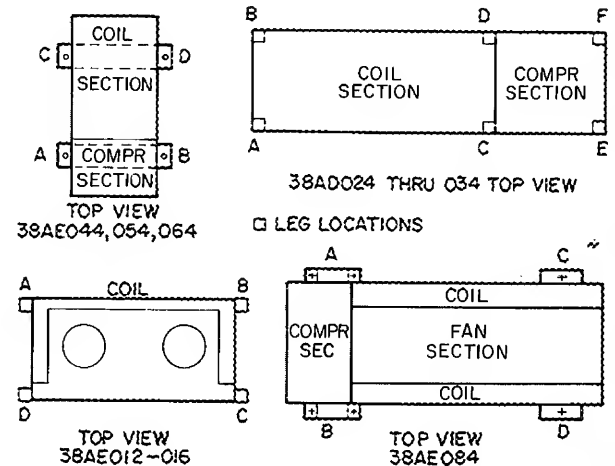
Certified dimension drawings available on request

DIMENSIONS 38AD,AE



WEIGHT DISTRIBUTION

MODEL 38		Oper Weight	WEIGHT (lb)					
			Support Point					
			A	B	C	D	E	F
AE	012	732	142	138	225	227	—	—
	014	779	143	140	247	249	—	—
	016	789	143	143	250	253	—	—
AD	024	1750	175	175	575	575	125	125
	028	1900	178	178	521	565	207	251
	034	2300	263	263	767	767	120	120
AE	044	2686	906	906	437	437	—	—
	054	3158	1047	1027	542	542	—	—
	064	3682	1174	1174	667	667	—	—
	084	5160	1828	1828	752	752	—	—



Selection procedure (with example)

I Determine required capacity, saturated suction temperature and temperature of air entering condenser.

Given:

Cooling load 241,000 Btuh
Saturated suction temperature
at compressor 30 F
Temperature air entering condenser 95 F

II Enter Condensing Unit Capacities table at required suction temperature air entering condenser for required capacity. Select a unit that will meet required conditions.

Unit 38AD028 has cooling capacity of 242,000 Btuh at 30 F SST, 118 F SCT and 95 F entering air temperature. Compressor motor power input is 25.4 kw.

Performance data

ARI COMBINATION RATINGS

COND UNIT		COIL OR AIR HANDLER	EVAP AIR (Cfm)	NET SYSTEM CAPACITY (Btuh)	EER
Model	SRN				
38BA 008	20	28CB008	3180	85,000	8.7
		28LA008	3225	86,000	8.9
		40RR008	3300	87,000	9.5
		40BA009	3300	88,000	9.0
		28CB012	3370	90,000	8.9
38BA 009	21	28CB008	3375	98,000	7.9
		28LA008	3375	98,000	7.9
		40RR008	3650	98,000	8.2
		40BA009	3750	100,000	7.6
		28CB012	3860	103,000	7.9
		28LA012	3860	103,000	7.9
38AE 012	22	40RR012	3750	100,000	7.7
		28LA008	3375	104,000	8.1
		28CB012	4000	110,000	8.3
		28LA012	3900	110,000	8.3
		40RR012	4000	119,000	9.0
38AE 012	22	40RR014	4500	121,000	9.3

EER — Energy Efficiency Ratio (Btuh/Watt)

SRN — Sound Rating Number (ARI)

NOTES

- Combination ratings are based on evaporators and condensing units at the same elevation and connected by 25 ft of tubing. If other than 25 ft of tubing is used and/or evaporator is installed above condensing unit, a slight capacity variation may occur.
- Net capacities shown include a deduction for evaporator fan motor heat.
- Direct interpolation is permissible. Do not extrapolate.

Rated in accordance with ARI Standards 210-75 and 270-75



38BA CONDENSING UNIT CAPACITIES (60-Hz)

MODEL 38		SST* (F)	TEMPERATURE AIR ENTERING CONDENSER (F)														
			85			95			100			105			115		
			Cap	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw
BA	008	30	74	110	6.5	69	119	7.0	66	124	7.2	64	128	7.4	58	137	7.9
		35	82	113	6.9	76	122	7.4	72	126	7.6	71	130	7.7	65	139	8.3
		40	90	115	7.4	84	124	7.7	81	128	8.0	78	132	8.2	71	142	8.9
		45	98	118	7.6	92	127	8.1	88	131	8.4	85	135	8.7	78	144	9.3
		50	107	121	7.9	100	129	8.5	96	134	8.9	92	138	9.2	85	147	9.8
	009	30	88	117	9.0	81	125	9.5	78	129	9.7	75	133	9.9	68	142	10.3
		35	97	120	9.6	90	128	10.1	85	132	10.4	83	137	10.6	76	145	11.1
		40	106	122	10.1	99	131	10.7	95	135	11.0	91	139	11.2	84	148	11.8
		45	116	125	10.6	108	133	11.3	104	137	11.7	100	142	12.0	92	151	12.5
		50	127	129	11.3	119	138	12.1	113	142	12.4	110	146	12.7	100	154	13.2

38AD,AE CONDENSING UNIT CAPACITIES (60-Hz)

MODEL 38		SST* (F)	TEMPERATURE AIR ENTERING CONDENSER (F)														
			85			95			100			105			115		
			Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw	Cap.	SCT	Kw
AE	012	20	75	107	78	66	115	83	64	121	84	61	125	87	56	135	90
		25	85	109	82	77	117	88	75	122	89	72	127	92	65	136	96
		30	96	111	87	88	119	92	85	124	94	82	129	98	75	138	102
		35	107	113	91	99	121	97	96	126	100	92	131	103	85	140	108
		40	118	115	95	110	124	102	106	128	105	103	133	108	95	142	114
		45	129	117	99	121	126	107	117	130	110	113	135	114	105	144	120
	50	140	118	104	132	128	111	127	132	115	123	137	119	114	146	126	
	014	20	88	105	92	80	114	97	76	119	100	73	124	103	66	134	108
		25	102	107	97	93	116	103	89	121	106	86	126	109	79	136	115
		30	116	109	101	107	119	109	102	123	112	98	128	115	91	138	121
		35	130	111	106	120	121	114	116	125	117	111	130	121	103	140	128
		40	144	114	111	134	123	120	129	128	123	124	132	128	115	142	135
		45	158	116	116	148	125	125	142	130	129	137	134	134	127	144	142
	50	172	118	121	161	127	131	156	132	135	150	136	140	139	146	149	
	016	20	113	110	125	103	120	131	98	124	135	92	129	138	83	138	142
		25	129	113	134	119	122	141	114	127	144	108	132	148	98	141	154
		30	146	116	142	135	125	151	130	129	154	124	134	158	113	143	164
		35	163	118	151	151	128	160	145	132	164	139	137	168	128	146	176
40		179	121	160	167	130	169	161	135	174	155	139	179	143	148	187	
45		196	124	168	183	133	179	177	137	184	171	142	189	158	151	198	
50	213	126	177	200	135	188	193	140	194	186	145	199	173	154	209		
AD	024	20	168	105	162	154	114	169	148	119	173	142	123	176	130	132	182
		25	185	107	172	171	116	181	164	121	185	157	125	188	144	134	196
		30	205	109	183	189	118	192	182	123	197	175	127	201	160	136	209
		35	226	112	193	209	120	204	201	125	209	193	129	214	178	138	223
		40	248	114	204	230	123	215	222	127	221	213	131	227	196	140	237
		45	271	117	215	252	125	227	243	129	233	234	134	240	216	142	251
	50	295	119	226	275	128	239	265	132	246	256	136	253	236	145	265	
	028	20	213	105	216	198	114	222	190	119	227	183	123	229	169	132	230
		25	236	107	228	219	116	232	211	121	243	203	126	244	188	134	247
		30	260	109	243	242	118	254	233	123	258	225	127	260	207	136	264
		35	285	111	252	266	120	269	256	125	272	247	129	276	228	138	281
		40	311	114	268	290	123	283	279	127	287	270	131	291	249	140	300
		45	337	116	278	315	125	296	304	129	304	293	134	309	272	142	319
	50	363	118	291	340	127	307	328	131	316	318	136	324	295	144	339	
	034	20	245	103	242	225	112	252	215	117	258	206	122	263	188	131	272
		25	271	105	257	249	114	269	239	119	275	229	123	281	210	132	292
		30	300	107	272	277	116	285	266	120	292	255	125	299	233	134	312
		35	331	109	287	306	118	302	294	122	310	283	127	318	260	136	332
40		364	111	302	338	120	319	325	125	328	312	129	336	287	138	353	
45		399	114	318	371	122	336	357	127	345	344	131	355	317	140	373	
50	435	116	333	405	125	353	390	129	363	376	133	373	347	142	393		
AE	044	20	317	106	331	291	115	344	278	120	350	266	124	356	241	134	367
		25	352	108	350	325	117	364	312	121	371	299	126	378	273	135	391
		30	390	110	368	361	119	385	347	123	393	333	127	400	306	137	416
		35	429	112	388	399	121	406	384	125	415	369	129	424	340	138	443
		40	470	115	408	439	123	428	423	127	439	407	132	449	377	140	470
		45	514	117	428	480	125	451	463	130	463	447	134	475	415	142	499
	50	558	120	450	522	128	475	505	132	488	488	136	502	454	145	530	
	054	20	393	106	403	363	116	417	348	120	424	334	125	431	305	135	444
		25	437	108	424	405	117	442	389	122	450	374	126	458	344	136	475
		30	483	110	447	450	119	467	433	123	477	417	128	487	385	137	507
		35	533	112	470	497	121	493	480	125	504	462	130	516	427	139	540
		40	585	114	494	547	123	520	528	127	533	510	132	546	472	141	573
		45	640	117	519	600	125	548	579	130	563	559	134	577	518	143	608
	50	699	119	545	654	128	577	632	132	593	610	136	609	565	145	643	
	064	20	469	105	470	435	115	486	418	119	494	401	124	501	369	134	517
		25	520	107	496	484	116	515	467	121	524	450	126	534	415	135	553
		30	574	109	522	537	118	545	519	123	556	501	127	567	464	136	591
		35	631	111	550	592	120	576	573	125	589	554	129	602	514	138	630
40		693	114	578	651	122	608	631	127	623	610	131	638	566	140	670	
45		758	116	608	713	125	641	691	129	658	667	133	675	619	142	710	
50	827	119	639	777	127	676	753	132	695	727	136	713	674	144	751		
084	20	619	109	646	571	119	674	546	125	689	522	130	700	476	140	721	
	25	699	110	681	648	120	713	621	125	729	595	130	743	545	140	768	
	30	778	111	717	724	121	752	696	125	769	668	130	785	614	140	815	
	35	863	114	757	806	123	796	777	127	815	747	132	832	690	142	866	
	40	948	116	798	888	125	840	858	129	860	825	134	879	765	143	916	
	45	1042	119	843	978	128	887	945	132	909	911	137	931	847	146	971	
50	1136	122	888	1068	130	935	1031	134	959	997	139	983	929	148	1027		

Cap. — Capacity (1000 Btu/h)
Kw — Compressor Motor Power Input at Rated Voltage
SCT — Saturated Condensing Temperature
SST — Saturated Suction Temperature

*Saturated Suction Temperatures (SST) shown correspond to pressures at compressor. Actual suction temperature is higher due to superheat

NOTES

Electrical data

ELECTRICAL DATA (60-Hz)

MODEL 38		UNIT				EACH COMPRESSOR				FAN MOTORS			
		Nameplate Voltage	Voltage Range	MCA	MOCP*	RLA	LRA	Total Fans	FLA (ea)		Kw		
									No. 1	No. 2			
BA	008	208/230	187-253	42.7	50	31.3	137	1	3.6	—	660		
		460	414-528	19.4	30	14.1	62		1.8	—	660		
		575	518-660	16.4	25	10.2	50		3.6	—	660		
	009	208/230	187-253	53.1	70	39.6	170		3.6	—	660		
		460	414-528	24.1	40	17.8	77		1.8	—	660		
		575	518-660	20.9	40	13.8	62		3.6	—	660		
AE	012	208/230	187-253	62.5	100	43.6	170	2	4.3	3.7	1.41		
		460	414-528	29.1	40	20.0	77		2.3	1.9	1.41		
		575	518-660	22.8	35	15.7	62		1.8	1.8	1.41		
	014	208/230	187-253	69.3	100	49.3	191		4.3	3.7	1.41		
		460	414-528	31.7	50	22.1	80		2.3	1.9	1.41		
		575	518-660	25.6	40	17.9	69		1.8	1.8	1.41		
016	208/230	187-253	87.5	125	63.6	266	4.3	3.7	1.41				
	460	414-528	40.7	60	29.3	120	2.3	1.9	1.41				
	575	518-660	33.0	50	23.8	96	1.8	1.8	1.41				
AD	024	208/230	187-253	103	175	76.0	345	3	No. 1	No. 2 & 3			
		460	414-508	51	80	36.0	173		4.5	4.6	3.36		
		575	518-632	41	60	28.6	120		1.9	1.9	3.36		
	028	208/230	187-253	145	225	100.0	446		6.2	6.6	4.05		
		460	414-508	69	110	48.0	223		3.0	3.0	4.05		
		575	518-632	62	100	43.4	164		2.5	2.5	4.05		
	034	208/230	187-253	170	275	120.0	506		6.2	6.6	4.05		
		460	414-508	72	110	50.0	253		3.0	3.0	4.05		
		575	518-632	64	100	45.0	176		2.4	2.4	4.05		
AE	044	208/230	187-253	187	250	No. 1	No. 2	4	No. 1 & 2	No. 3,4,5,6†			
		460	414-508	89	125	76.0	345		4.6	4.6	2.68		
		575	518-632	74	80	36.0	173		2.3	2.3	2.68		
	054	208/230	187-253	241	350	119.0	506	6	4.6	4.6	4.02		
		460	414-508	111	150	53.0	253		2.3	2.3	4.02		
		575	518-632	93	100	45.0	176		1.8	1.8	4.02		
	064	208/230	187-253	284	400	119.0	506	6	4.6	4.6	4.02		
		460	414-508	128	175	53.0	253		2.3	2.3	4.02		
		575	518-632	108	125	45.0	176		1.8	1.8	4.02		
	084	208/230	187-253	371	450	No. 1	No. 2 & 3	6	No. 1 & 2	No. 3,4,5,6†			
		460	414-508	167	200	76.0	345		6.2	7.7	7.98		
		575	518-632	141	150	36.0	173		3.3	3.3	7.98		

Amp draw at 230 volts. The units have a 575- to 230-volt transformer and use a 230-volt motor.

FLA — Full Load Amps, for fan motors
Kw — Total Kilowatts
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps. Complies with National Electrical Code (NEC), Section 430-24.
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps, for compressor motors
Voltage Range — Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits. Maximum allowable voltage unbalance between phases is 2%.

*Fuse only

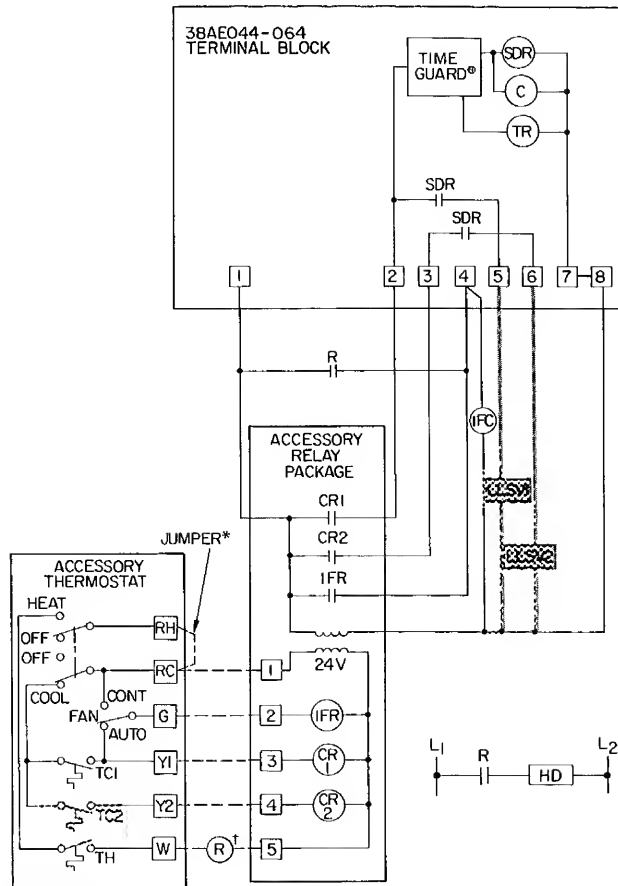
†Only No. 3 and 4 on 38AE044

NOTES:

- On 38AE084 units, the center compressor is No. 1, the left is No. 2 and the right is No. 3, viewed from the compressor end of the unit. On all other 38AE units, the left compressor is No. 1 and the right is No. 2, viewed from compressor end.
- On 38AD units, No. 1 fan is adjacent to the compressor compartment; on 38AE units, No. 1 and 2 fans are in this location.
- Speed control fan motors for Motormaster® application.
 38BA008,009 — standard on 200-, 230-, 460-volt units.
 38AE012,014,016 (No. 1 fan) — standard on 208-230-, 460-volt units.
 All other 38AD (No. 1 fan) — standard on 200-, 230-volt units; special on 460-volt units.
 All 38AE (No. 1 & 2 fans) — standard on 200-, 230-, 460-volt units.

Accessory control wiring

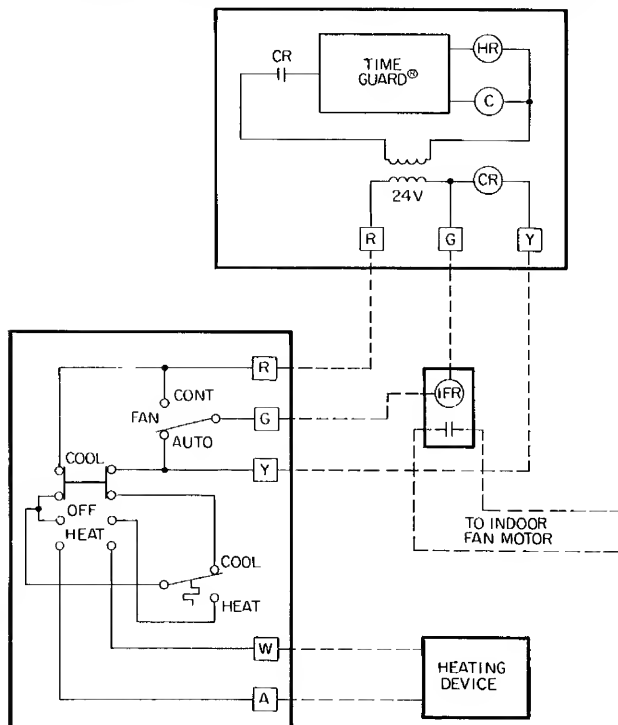
DEFROST THERMOSTAT, 24-VOLT RELAY PACKAGE AND REMOTE CONTROL CENTER FOR 38AE044-084 UNITS



When interconnecting piping is under 125 feet:
One-step cooling — no LLSV is required
Two-step cooling — only LLSV1 is required

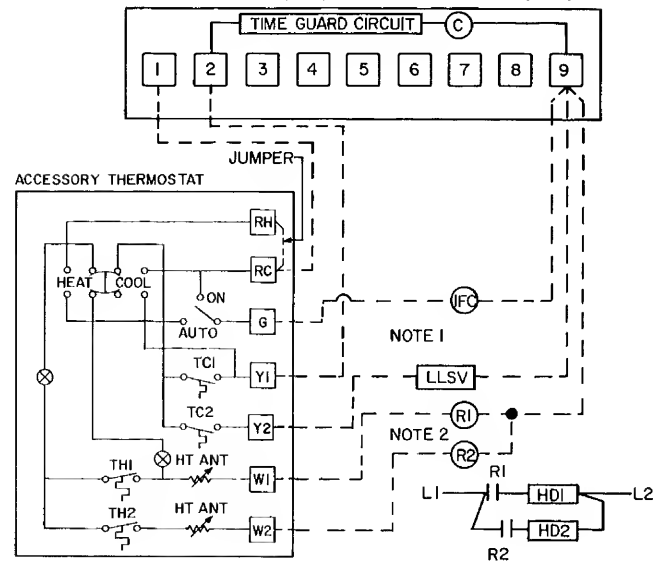
When interconnecting piping is over 125 feet:
Both LLSV1 and LLSV2 are required
For one-step cooling, wiring must be changed to
control both LLSV1 and LLSV2 thru TC1

ACCESSORY CONTROL WIRING — 38BA008,009



ACCESSORY THERMOSTAT WIRING, 38AE012-016 UNITS

TERMINAL BLOCK (TB2) IN 38AE012-016 CONTROL BOX

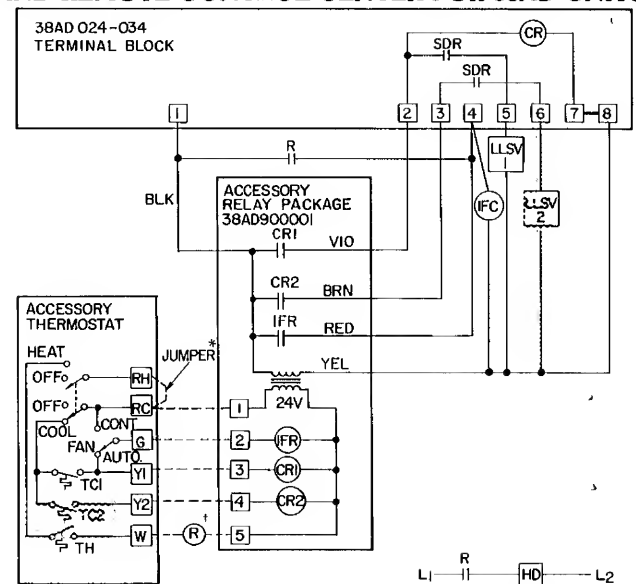


NOTES:

- 1 Combination LLSV plus IFC VA should not exceed 30 VA
- 2 Do not exceed 5 VA (24 VAC) per coil

Use accessory relay-transformer package 38AE900001 if these VA values must be exceeded

DEFROST THERMOSTAT, 24-VOLT RELAY PACKAGE AND REMOTE CONTROL CENTER FOR 38AD UNITS



LEGEND AND NOTES FOR ELECTRICAL DIAGRAMS

C — Compressor Contactor
CR — Control Relay
HD — Heating Device
HR — Holding Relay
IFC — Indoor Fan Contactor
IFR — Indoor Fan Relay
LLSV — Liquid Line Solenoid Valve
R — Heat Control Relay (field-supplied, 24-volt sealed coil, 10-va max rating)

SDR — Solenoid Drop Relay
TC — Thermostat, Cooling
TH — Thermostat, Heating
TR — Timer Relay
Trans — Transformer

———— Factory Wiring
----- Field Wiring

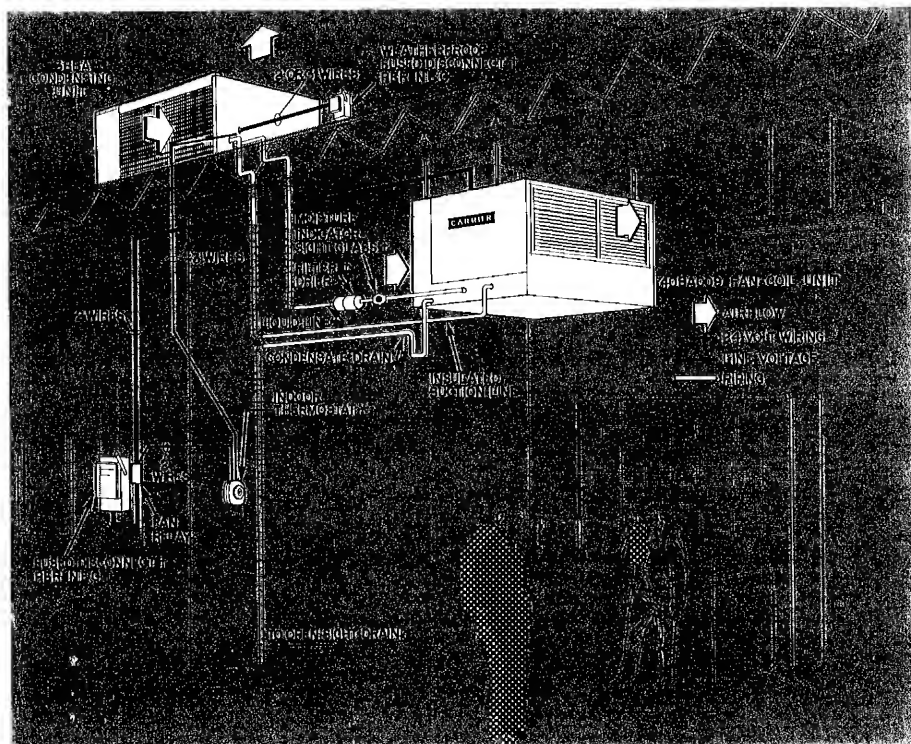
Omit on one-step cooling

*Jumper removed only when separate 24-volt power sources are available for heating and cooling

†To control heating device and provide automatic indoor fan operation on heating (2-pole, field supplied)

NOTE: Wiring diagrams are general guides only and are not intended for a specific installation. Refer to individual product Installation, Start-Up, and Wiring literature

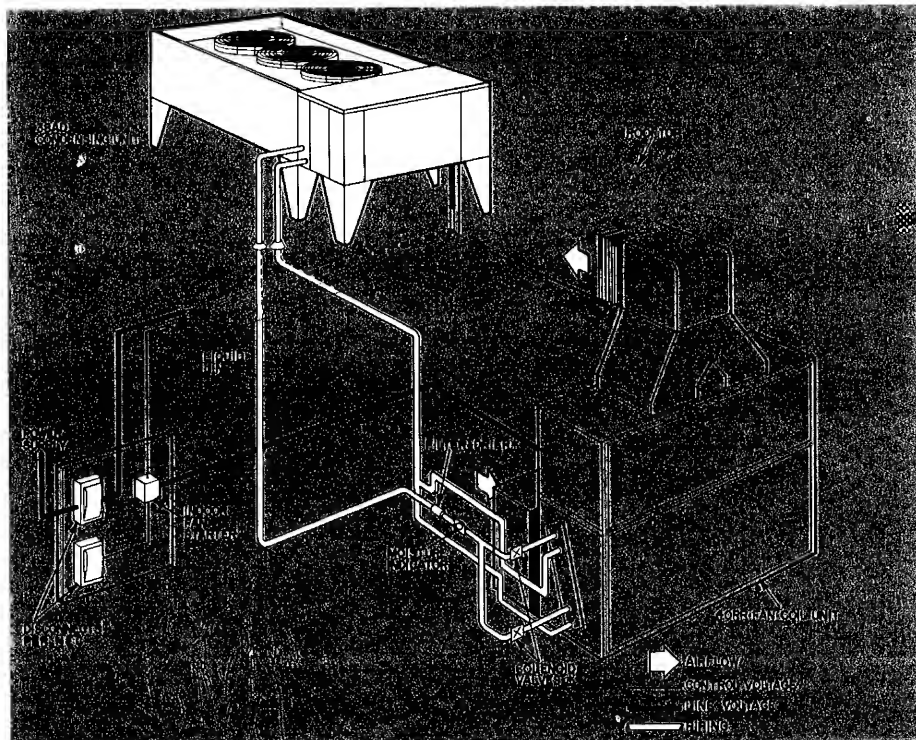
Typical piping and wiring



*Accessory item
†Field supplied

NOTES

- 1 All piping must follow standard refrigerant piping techniques Refer to Carrier System Design Manual for details
- 2 All wiring must comply with the applicable local and national codes
- 3 Wiring and piping shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation



*Field supplied

NOTE This illustration is only one example of 38AD/40RR unit connections and not intended to be used as a guideline for system hookups Refer to the 38AD/40RR Installation Instructions for preferred piping techniques

Accessories

- **Electric unloaders**, when coupled with appropriate remote sensors, react quickly to the smallest temperature variation for maximum energy savings.

- **Pressure operated unloader** provides additional step of capacity for Models 38AE012, 38AE014, 38AE016 and 38AE064. Includes cylinder head, valve plate, unloader valve, and hardware.

- **Remote control center and switch base** (24 volt) for thermostatic control of unit from conditioned space. Single-stage, heating-cooling or two-stage heating, single-stage cooling models are available. Allows selection of heating and cooling; allows continuous or cycling operation of indoor fan.

- **Indoor fan relay** controls indoor unit fan motor.

- **Evaporator defrost thermostat package** may be used with winter start control. Contains thermostat, enclosure and necessary wiring and hardware.

- **Low Voltage Relay Package**, a fan relay, support relays, terminal block and enclosure. (Standard in Model 38BA.)

- **The 32LT Motormaster® control** is a solid-state device which measures the saturated condensing temperature of the system and controls the RMS power flow to fan motor. The airflow varies with the fan speed, keeping the condensing temperature and head pressure constant.

- **Gage panel**

- • **Hot gas bypass package** (38AD024-034 and 38AE044-064).

- **Coil grille packages** (38AE012-016 and 38BA008,009).

- **Winter start package** (38AE012-016).

- **Relay transformer package** (38AE012-016).

Application

Indoor installations

1. Unit (except Model 38AE044 thru 084) may be installed indoors with ducted condenser air when suitable outdoor location is not available. Condenser fan may be operated against an external static pressure up to 0.2 in. wg. There will be approximately a 1% decrease in capacity at 0.1 in. wg and 3% decrease at 0.2 in. wg.
2. Do not install unit indoors when air entering condenser will exceed 110 F.
3. Standard installation procedures should be followed with regard to ductwork, insulation and vibration isolation. Ducts should be arranged to prevent recirculation of condenser air.

Use of liquid line solenoid valves

- 38BA008,009; 38AE012 thru 016: liquid line solenoid valves not required for single evaporator coil applications.
- 38AE012 thru 016 dual coil applications: single liquid line solenoid required to deactivate upper second-stage coil.
- 38AD024 thru 034: liquid line solenoid valves required for each evaporator coil stage

38AE044 thru 084 may require liquid line solenoid valves in two types of applications. In installations requiring 125 ft or more of interconnecting piping, solenoid valves are required on all coil splits to be operated by the solenoid drop relay that is installed in the unit. In installations where the compressors are able to unload to a very low percentage of full load, it is usually necessary to install liquid line solenoid valves on one or more of the coil splits to assure sufficient refrigerant velocity in the coil to return oil to the compressor.

The 38AD024 thru 034 units are wired for single pumpout control. Field-supplied liquid line solenoid valve(s) is required to restrict the flow of refrigerant to the evaporator during the off cycle. When the thermostat is satisfied, the liquid line solenoid valve(s) will close. The unit, however, will continue to run, evacuating the low side, until the low pressurestat opens.

The 38BA008,009, 38AE012-016, and 38AE044-064 do not require single pumpout control or a liquid line solenoid drop when the unit is de-energized unless the interconnecting piping exceeds 100 ft (125 ft in the Model 38AE).

Field-supplied liquid line solenoid valves are required on units with multiple evaporators to deactivate upper portion of evaporator coil surface in order to unload compressor (suction-activated unloaders) at part-load conditions and provide single pumpout control when last solenoid drops. *Pumpdown control is not recommended.*

Solenoid drop protection (liquid line solenoid valve closes, compressor shuts off and crankcase heaters energize simultaneously) is recommended for Series 10 cooling applications. Single pumpout is not recommended for Series 10 cooler applications because of possible damage due to frost pinching of cooler tubes.

Oil return

Condensing units with multiple-step unloading *may require double suction risers* to assure proper oil return at minimum load operating conditions. Reduction of evaporator coil surface should be analyzed to provide sufficient refrigerant velocity to return oil to the compressor. Liquid line solenoid valves may be used in certain situations to accomplish this. Bypass hot gas, if used, should be introduced before the evaporator. Consult Carrier System Design Manual.

MINIMUM OUTDOOR AIR OPERATING TEMPERATURE

MODEL 38		NO. OF CYL	% FULL LOAD CAP.	MINIMUM OUTDOOR OPER TEMP (F)*	
				DX Evaporator(s)	
				Single	Multiple
BA	008	4	100	55	55
	009	6	100	50	50
AE	012	6	100	35	35
		4	67	45	55
		2†	33	55	75
	014	6	100	37	37
		4	67	48	58
		2†	33	57	77
	016	6	100	23	23
		4	67	36	46
2†		33	50	70	
AD	024	4	100	0	0
		2	50	20	30
	028 and 034	6	100	15	15
		4	67	30	40
AE	044	2	33	45	65
		8	100	38	38
		6	75	41	51
		4	50	44	54
	054	2	25	57	77
		10	100	14	14
		8	80	29	29
		6	60	34	44
		4	40	40	60
	064	2	20	47	67
		12	100	14	14
		10	83	17	17
		8†	67	32	42
		6	50	32	42
	084	4	33	45	65
		2†	17	58	78
		16	100	14	14
		14	88	15	15
084	10	63	33	43	
	8	50	32	42	
	4	25	46	66	

*With accessory 32 Series Motormaster® head pressure control units can operate to -20 F ambient

†Requires accessory pressure-operated unloader package

NOTES

- 1 Minimum outdoor air operating temperatures for single DX evaporator based on



On application with multiple DX evaporators, the compressor may be unloaded while an individual coil(s) is still fully loaded. For proper expansion valve operation under this condition, a 90 F condensing temperature must be maintained by observing the minimum ambient under the Multiple DX Evaporator(s) column.

- 2 Winter start operation is standard on 38AD024 thru 034 and 38AE044 thru 084 units and built into the control circuit. The low-pressure switch is automatically bypassed for 2-1/2 minutes on start-up; no liquid line low-pressure switch is required. Field-fabricated wind baffles are required on all 38AE units.
- 3 For winter start operation on 38AE012 thru 016 units, use accessory package 38AE900021.
- 4 For winter start operation on 38BA008 and 009 units, relocate the low pressurestat connection to the connection on the liquid line service valve. Field-fabricated wind baffles are required.
- 5 For evaporator freeze-up protection on 38BA units, add thermostat (Carrier Part 50BB900001) to indoor coil.

Application (cont)

LIQUID LINE DATA

MODEL 38		MAX ALLOW LIQUID LIFT (ft)*
BA	008	60
	009	45
AE	012	52
	014	67
	016	82
AD	024	84
	028	64
	034	46
AE	044	73
	054	38
	064	56
	084	52

*Based on a 2 F liquid line loss and a 7 psi pressure loss for accessories

Guide specifications

Furnish and install an air-cooled condensing unit in the location and manner shown on the plan. The unit shall be properly assembled and tested at the factory. It shall be designed for use with Refrigerant 22.

Nominal unit electrical characteristics shall be _____ volts, 3-phase, _____ Hertz. The unit shall be capable of satisfactory operation within voltage limits of _____ volts to _____ volts.

Performance — Capacity shall be _____ Btuh or greater, with air entering condenser at _____ F, and a saturated suction temperature at compressor of _____ F. Saturated condensing temperature shall not exceed _____ F. Maximum liquid lift shall be _____ feet.

→ The unit shall operate down to _____ F outdoor air temperature entering condenser with standard controls and down to _____ F outdoor air temperature with addition of Solid-State Motormaster® Head Pressure Controller.

Condenser coil shall be of nonferrous construction. Coil shall have aluminum plate fins, mechanically bonded to seamless copper tubes. Coil shall be circuited for subcooling.

Condenser fans and motors — Unit shall be furnished with _____ direct-driven, propeller-type fans arranged for vertical discharge. Condenser fan motors shall have inherent protection, and shall be of the permanently lubricated type, resiliently mounted. Each fan shall have a safety guard. Controls shall be included for cycling fan(s) for intermediate season operation.

Compressor(s) — Unit shall have _____ compressors. Each shall be of serviceable hermetic design with external spring isolators and shall have an automatically reversible oil pump. Maximum power input to compressor shall not

be more than _____ kw at conditions specified.

Compressor shall unload in response to suction pressure down to _____ % of full capacity in _____ steps for partial load operation. Compressor shall be located in a section separated from condenser fans and coil.

Multiple compressor units shall have step-start fans and coils. Compressor motor(s) shall have (part-winding start), (across-the-line start).

Controls shall be factory wired and located in a separate enclosure. Safety devices shall consist of high- and low-pressure switches and compressor overload devices. Unit wiring shall incorporate a positive acting timer to prevent short cycling of compressor if power is interrupted. Timer shall prevent compressor from restarting for approximately 5 minutes after shutoff.

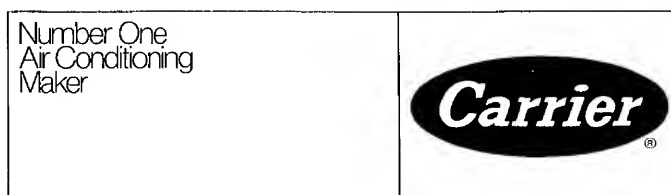
The 460- and 575-volt 38BA units shall have a transformer for the 230-volt control circuit. All 38AD and 38AE044-084 units, for all voltages, shall have a transformer for the 115-volt control circuit. The 38AE012-016 units shall have transformer for 24-volt control circuit for all voltages.

Casing shall make unit fully weatherproof for outdoor installation. Casing shall be of galvanized steel, zinc phosphatized and finished with baked enamel.

Openings shall be provided for power and refrigerant connections. Panel shall be removable to provide access for servicing.

Connections — Only one liquid line, one suction line and one power supply connection shall be required for each unit.

Dimensions of entire assembly shall be not more than _____ in. high, _____ in. long and _____ in. wide.



Carrier Parkway • Syracuse, N.Y. 13221

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Book	1	2	4
Tab	3a	1a	2a

Form 38AE-4P Supersedes 38AE-3P

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